

## Weekly Report

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1. 分辨率自适应可视化

1.1 感知领域教授交流

郑老师和之后介绍的陈老师都偏生物分子理论方面，需要另寻心理学相关教授请教。

1.2 相关工作

对看的感知相关论文进行了简单的整理（仍在进行中）（图 1）

感知相关工作整理

2018年1月9日 20:33

基础理论

- visual acuity

Type	Description
Point acuity (1 arc minute)	The ability to resolve two distinct point targets.
Grating acuity (1-2 arc minutes)	The ability to distinguish a pattern of bright and dark bars from a uniform grey patch.
Letter acuity (5 arc minutes)	The ability to resolve a letter. The Snellen eye chart is a standard way of measuring this ability. 20/20 vision means that a 5-minute letter target can be seen 90% of the time.
Stereo acuity (10 arc seconds)	The ability to resolve objects in depth. The acuity is measured as the difference between two angles for a just-detectable depth difference.
Vernier acuity (10 arc seconds)	The ability to see if two line segments are collinear.

= visual angle  $\frac{\theta}{2} = \arctan(\frac{x}{d})$

= 感知能力非均匀分布

- perceptual scalability (high-res)

- order of visual processing

Insight 获取

散点图相关

视觉通道

尺寸相关

- font size

模式 (聚类/相关性)

引用

A Survey of Display Device Properties and Visual Acuity for Visualization

Information Visualization: Perception for Design

Effect of the Size of a Complex Display on Visual Search

The perceptual scalability of visualization

The order of visual processing: "Top-down," "bottom-up," or "middle-out"

Perceptual Biases in Font Size as a Data Encoding

Figure 1: 感知相关论文简单整理（进行中）

2. IDEA项目

- 制作了展板（1.10展出）
- 修改了视频标题以供展出用

### 3. Others

- 省科学技术奖申请相关

## Papaer Reading

### Scatterplot

[1] J. Li, J. J. Van Wijk, and J. B. Martens, “A model of symbol lightness discrimination in sparse scatterplots,” IEEE Pacific Vis. Symp. 2010, PacificVis 2010 - Proc., pp. 105–112, 2010.

[2] J. Li, J. B. Martens, and J. J. Van Wijk, “A Model of Symbol Size Discrimination in Scatterplots,” Proc. SIGCHI Conf. Hum. factors Comput. Syst. - CHI ’ 10, pp. 2553–2562, 2010.

这两篇和我们目前工作有比较大的相似性，可以参考。（两篇文章基本上只修改了对应关键字，使用的方法、数学模型和写作都几乎完全一致，水文章能力太强...）

[3] A. C. Telea and L. Linsen, “Skeleton-based Scagnostics,” vol. 24, no. 1, pp. 542–552, 2018.

文章本身和当前工作没什么关联，不过scagnostics里用到的一些散点图的定量化表达可能可以作为定量模型或者定性分析中的参考指标（例如：图中散点分布均匀程度与用户感知半径的关系）

### Cognition

[1] R. Kinchla and J. Wolfe, “The order of visual processing: ‘Top-down,’ ‘bottom-up,’ or ‘middle-out,’” Percept. Psychophys., vol. 25, no. 3, pp. 225–231, 1979.

认知顺序，可能相关。

[2] Z. Liu, N. Nersessian, and J. Stasko, “Distributed cognition as a theoretical framework for information visualization,” IEEE Trans. Vis. Comput. Graph., vol. 14, no. 6, pp. 1173–80, 2008.

心理学理论与可视化结合的例子。其中有Ben大爷的5个阶段理论相关（descriptive/predictive/...）

[3] M. A. Yalçın, N. Elmqvist, and B. B. Bederson, “Cognitive Stages in Visual Data Exploration,” Proc. Beyond Time Errors Nov. Eval. Methods Vis. - BELIV ’ 16, no. i, pp. 86–95, 2016.

更多的与VA相关，与当前工作关联不大。

[4] A. C. Valdez, M. Ziefle, and M. Sedlmair, “Priming and Anchoring Effects in Visualizations,” IEEE Trans. Vis. Comput. Graph., vol. 24, no. 1, pp. 584–594, 2017.

近年的感知相关论文，作为参考。其中的priming和anchoring effects可能要在做user study时考虑到。

## Works Progresses

TASK	PROGRESS	TODO	ISSUES	DATE
分辨率自适应可视化	制作了简单的测试系统	学习/咨询相关理论基础		
专利（两个）	1/2	继续按照要求修改		
VisComposer	投PFAST	等待回复		
VisEvo		idea evaluation		下周
JVLC	publicated			
电子学报	已提交	等待回复		
ECharts论文	投PFAST	等待回复		
IDEA项目	1/10 展板			

## 投稿期间计划

目前暂定离校返校日期按实验室推荐(1.27-2.25)。其他日期计划见图 2

公研率自适应可视化

UesEvo

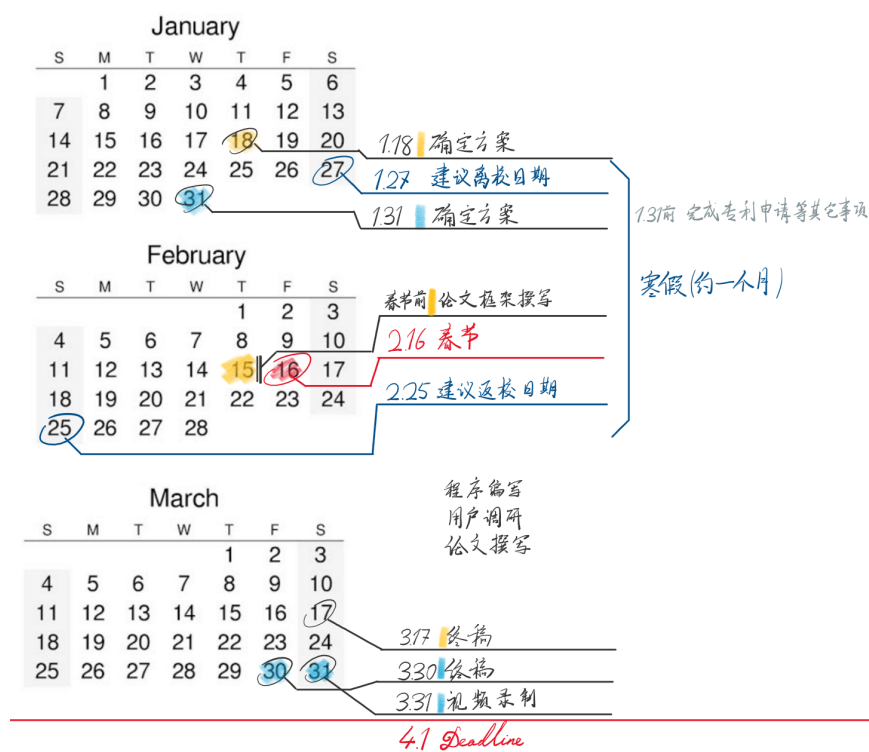


Figure 2: 投稿期间计划